SHOUT
SHARE
IT

ROYAL LIBR

Digitized by the Internet Archive
in 2011 with funding from
University of Toronto

http://www.archive.org/details/faunalinvestigat00roya

3 1761 05013 4972

CONTRIBUTIONS OF THE ROYAL ONTARIO MUSEUM OF ZOOLOGY

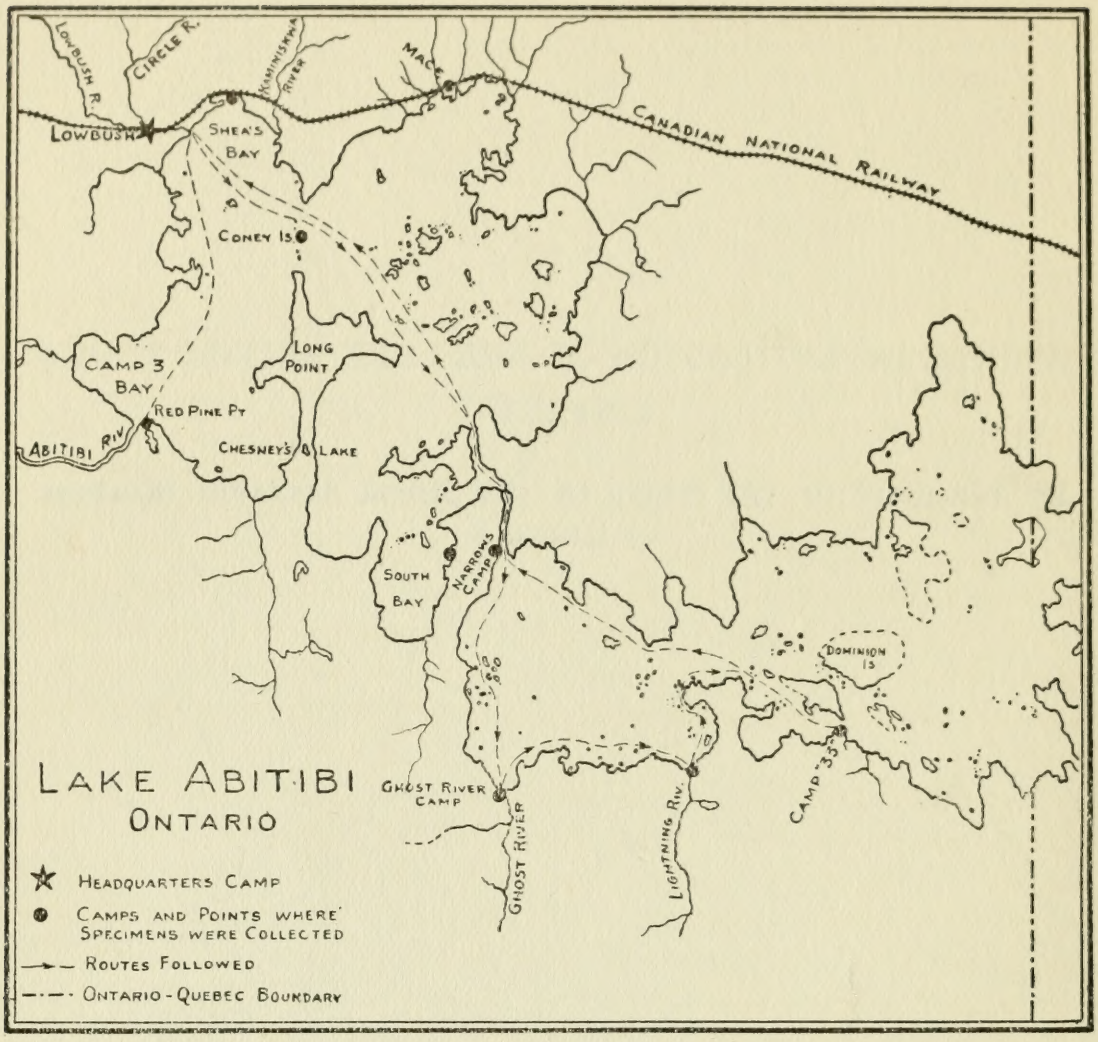
No. 2: A FAUNAL SURVEY OF THE LAKE ABITIBI REGION, ONTARIO, BY THE STAFF OF THE ROYAL ONTARIO MUSEUM OF ZOOLOGY.

(*Reprinted from University of Toronto Studies: Biological Series No. 32*).

PUBLISHED OUT OF A DONATION BY WM. ROBERTSON, ESQ.

A FAUNAL INVESTIGATION OF THE LAKE ABITIBI REGION, ONTARIO

By Members of the Staff of the Royal Ontario Museum of Zoology



MAP OF LAKE ABITIBI

Scale 8 miles to the inch.

Reprinted from University of Toronto Studies: Biological Series No. 32, 1928.

A FAUNAL INVESTIGATION OF THE LAKE ABITIBI REGION, ONTARIO

General Introduction

By L. L. Snyder

Lake Abitibi is situated on the northern slope of the Hudson bay watershed about 160 miles south of James bay. It is divided by the north-south Ontario-Quebec boundary line, approximately seven-eighths of its basin being in Ontario. The surrounding country is described as the northern clay belt, a rich deposit having been laid down by Lake Ojibway when that extensive precursor of Lake Abitibi covered the region during the recession of the last Labradorian ice sheet. There are outcroppings of Laurentian granites and of diabase in the area, but the general aspect of the topography is somewhat less rugged than is characteristic of other sections of the Province where this formation is exposed. The bolder prominences are to be found mainly on the south shores.

Lake Abitibi is, in outline, two lakes, the upper (eastern) and the lower (northern), these being connected by "The Narrows" about midway of the whole extent. The total area of the lake is 335 square miles. The altitude at natural high water level is 878.50 feet (Dymond and Hart, 1927). The greatest depth so far as known is 23 feet, while the usual depth is from 6 to 15 feet. Because of the extent of its area, considerable wave action is developed by winds and this agitates the shallow water almost or quite to the bottom, producing fairly uniform temperatures and high turbidity. The lake drains through the Abitibi river, which flows from the west side of the lower lake and joins the Moose river some thirty miles from its mouth at James bay.

The lake contains numerous islands, mostly wooded and of moderate elevation. The shore line is irregular, creating shallow bays, many of which are fringed with standing and fallen drowned timber principally

of balsam poplar. This condition is due to raising the lake level by damming its outlet and has at least temporarily affected the ecological conditions of the shore, especially where the border is a gradual clay slope.

For the most part the region is well forested, although fires have destroyed considerable tracts, particularly on the rocky hills to the south. The principal forest type of the region is the mixed stand of paper birch, balsam and aspen poplar, balsam fir and white spruce, although this is followed closely in extent by almost pure stands of black spruce. The latter usually grows on poorly drained soil which forms a bog condition, but it is found also in dry situations. Jack pine grows in the mixed forest in some places, and on some of the dry, sandy ridges pure stands are found, but these constitute a small percentage of the forest. Immediately surrounding the lake, white cedar, white pine, yellow birch, and black ash occur, mostly in mixtures, not as extensive forest types. Speckled alder grows in the damp hollows, as does also scrub willow of several species. Dwarf birch was found beneath some of the black spruce growths, and mountain maple occurs on the floor of the mixed forest in some places.

The climate of the Lake Abitibi region is one of extremes. The highest temperature which has been recorded is 94°F. and the lowest—51°F. The isotherm of 32°F. mean annual temperature crosses slightly to the north of the lake. The average low temperature for the month of July is 54°F. and the average high temperature for that month is 74°F. The lake usually freezes over by early November and is again open by the latter part of April or early in May.

The Canadian National Transcontinental Railway skirts the northern part of the lower lake coming close to its border at the trading post known as Lowbush and again at Mace. The unfenced right-of-way has not greatly altered the virgin conditions of the area. Lowbush is composed of two trading stores, a half dozen or so cabins and private buildings and as many frame buildings owned by the Abitibi Power and Paper Company. These latter buildings are used on occasion by the Company's men in the field. Mace is a smaller settlement than Lowbush, embracing only a station house, two buildings, in which the commercial fishermen live, and a few other buildings used in connection with their occupation.

Lake Abitibi, being the headwaters of one of the oldest and most frequented canoe routes to James bay, is well known by name but, the

region surrounding the lake has received little attention from naturalists. It has been, and still is, a productive fur district, but trappers are forced to go farther back (north) from the lake each year to secure a profitable catch. Geologists have explored much of the region and the minerals to be found there are of considerable importance. The pulp wood is being harvested by proper forestry methods, and this resource contributes much to the commercial importance of the region. The time was opportune to make a survey of the life of the district and accordingly the Royal Ontario Museum of Zoology sent a party there during the summer of 1925. Through the courtesy of the Abitibi Power and Paper Company their camps were made available and transportation facilities provided. For this accommodation and assistance the grateful thanks of the Museum and its field workers are here extended. Special acknowledgement is made to Mr. Walter Kischbaugh, the Company's field representative, for his co-operation and advice in connection with the work. The party also received valuable assistance from residents of Lowbush, particularly from Mr. David Price and Mr. Robert Reed.

Life Zone and Faunal Area

The results of the Museum's survey of the Lake Abitibi region indicate that it is in the heart of the Algonquan faunal area of the Canadian life zone. Many species which are regarded as indicators of the Canadian zone appear to be at the centre of their abundance in this latitude. The finding of such species as the three-toed woodpecker (*Picoides americanus*) and the hawk owl (*Surnia ulula caparoch*) indicates that the region is nearer the Hudsonian belt than is Lake Nipigon (Dymond and others 1928), although these examples are recognized as occurring in both zones.

The forest is composed of characteristic Algonquian types, and the relative proportion or extent of each type is such as may be found throughout the wooded portion of the Canadian life zone. Such species of trees as the black spruce and the poplars attain a maximum size in this region.

An interesting feature concerning the fauna of the region is the appearance of a slight but significant western relationship. A form of the western chipmunk, *Eutamias minimus borealis*, occurs although not commonly; *Tamias striatus griseus*, the western form of the eastern

chipmunk is found sparingly; the occurrence of the ring-necked duck, *Marila collaris*, in summer is noteworthy; a summer record of the lark bunting, *Calamospiza melanocorys*, was established; the garter snake (*Thamnophis sirtalis*) also exhibits colour tendencies characteristic of the western forms of this species; the goldeye, *Amphiodon alosoides*, a species of fish previously known from the Lake of the Woods on the Manitoba-Ontario boundary and westward, is common in Lake Abitibi; a western race of dragonfly, *Aeshna interrupta lineata* was collected and two species of spiders, *Pellenes laggani* and *Coriarachne brunneipes*, previously known only from the west were taken.

Previous Work

With the exception of geological and ichthyological studies, the natural history of the Lake Abitibi region has not been extensively investigated. Terrill (1913) reported four species of birds observed in winter "fifty miles east of Cochrane". The report on geological studies by Wilson (1913) considers in a generalized manner the flora and fauna of the region. Also Williams (1920) lists the birds observed on a trip to James bay in the late summer of 1919. Some of the observations were made at Cochrane which is within the immediate region of Lake Abitibi. The publication by Dymond and Hart (1927) on the Fishes of Lake Abitibi is the most recent contribution dealing with the fauna.

LITERATURE CITED

DYMOND, J. R. and HART, J. L. 1927. The fishes of Lake Abitibi (Ontario) and adjacent waters. University of Toronto Studies, Pub. Ontario Fisheries Research Lab. No. 29.

DYMOND, J. R., SNYDER, L. L., LOGIER, E. B. S. 1928. A faunal investigation of the Lake Nipigon region, Ontario. Trans. Roy. Can. Inst., **16**: 233-291.

TERRILL, L. M. 1913. Bird notes. Ottawa Naturalist **27**: 76.

WILLIAMS, M. Y. 1920. Notes on the fauna of the Moose river and the Mattagami and Abitibi tributaries. Can. Field-Nat. **35**:121-126.

WILSON, M. E. 1913. Kewagama lake map-area, Quebec. Geol. Series No. 35, Mem. 39, Dept. of Mines, Ottawa.

THE MAMMALS OF THE LAKE ABITIBI REGION

By L. L. Snyder

Introduction and Acknowledgements

The following account of the mammals of the Lake Abitibi region is based on a collection made and information secured at the time of the Museum's expedition to that area during June, July, and early August, 1925. The collection was made chiefly by Mr. W. J. LeRay, but the writer took a minor part in the work in order to obtain a general understanding of prevailing conditions. For Mr. LeRay's interest in the work and for the careful preparation of material I am greatly indebted. For considerable general information regarding the mammals of the region I wish to thank Mr. William Campbell, a buyer of furs and a resident of Lowbush since 1906. I also wish to acknowledge the assistance of Mr. J. L. Baillie of the Museum staff for his assistance with the mammal work.

Specimens of the following mammals were sent to the Bureau of Biological Survey, Washington, for determination,—*Sorex c. cinereus*, *Microsorex hoyi intervectus*, *Blarina brevicauda talpoides*, *Eutamias minimus borealis*, *Tamias striatus griseus*, *Microtus c. chrotorrhinus*, and *Napæozapus insignis abietorum*.

General Account

During field work a number of camps were established. These were so situated as to give access to as wide a variety of habitat conditions as possible. The map accompanying this report indicates the sections visited and the routes taken. The longest stay was made at the initial camp at Lowbush, while the other locations were surveyed during a nine-day stop at each.

The mammal collection comprises one hundred and fifty-four skins, mostly with skulls, and a few embryonic specimens preserved in alcohol. Where measurements of specimens are given in the following list, L. is the length of the specimen in the flesh from the tip of the nose to the end

of the tail vertebrae, T., the length of tail (not including hair) taken from specimens in the flesh, and H.F., the length of hind foot from the heel to the tip of the longest toe and claw, measured from skins. All measurements are in millimetres.

Sorex cinereus cinereus KERR. MASKED SHREW.—Of the ten specimens collected eight were taken beneath, or near alder growths in moist ravines, or near streams or the lake shore. One specimen was taken in a burned area and another was captured alive while sleeping at midday on the top of a stump in a mixed woods. The average measurements of the specimens are as follows,—L., (for 9 specimens) 94.75; T., (for 9 specimens) 42.75; H.F., (for 10 specimens) 11.5.

Microsorex hoyi intervectus JACKSON. HOY'S SHREW.—A single specimen was taken under fallen brush in a growth of spruce, poplar, and alders, near Lowbush on July 15. The measurements of the specimen in the flesh were not secured.

Blarina brevicauda talpoides (GAPPER). MOLE SHREW.—Two specimens were collected, both in moist woods of mixed stands. They appeared not to be plentiful during the period of our stay in the region, since traps that were regularly set in suitable situations failed to procure others. The average measurements of the two adult specimens taken are, L., 113; T., (one specimen) 27; HF., 14.5.

Myotis (sp.?). LITTLE BROWN BAT.—While camped at the Narrows on June 18, a small bat was seen for a moment as it flew along the lake shore. This was the only bat seen during the summer.

Euarctos americanus americanus (PALLAS). BLACK BEAR.—Bears were not common in the region and according to Mr. Campbell they have never been numerous, probably because the surrounding region is too wet. One was seen during the summer by Prof. E. M. Walker and Mr. A. L. Pritchard at Ghost river and signs were noted at the Narrows by Mr. LeRay and myself.

Martes americana americana (TURTON). MARTEN.—The species is getting rather scarce in the immediate vicinity of the lake but it is still taken in some numbers in the region as a whole. Mr. Campbell states that there are about ten marten taken to one fisher in the Abitibi region. No specimens were secured by us but a number of skins from

Lake Abitibi were examined at the tannery of Mr. A. F. Schnaufer at Toronto. Considerable variation in the shade of colour was evident. A captive specimen was seen by us at Lowbush.

Martes pennanti pennanti (ERXLEBEN). FISHER.—Not very common, but according to Mr. Campbell more were taken during the winter 1925-26 than for several years previously. Trappers secure more fishers by tracking them than by trapping.

Mustela cicognanii cicognanii BONAPARTE. BONAPARTE'S WEASEL.—A single specimen was secured at Lowbush on June 2. Weasels are fairly numerous, many being taken each winter, apparently more as an incidental product of the trap line than a direct objective. Woodsmen and trappers value the service rendered by weasels in ridding their cabins of mice. Mr. Campbell told me that one was active about his camp during the past spring and that it had caught all the mice harboured there. These it carried beneath the floor of the trading post store-room and its immediate reappearance suggested that the mice were being cached The one measurement secured from a badly mangled specimen is T., 68.

Mustela vison vison SCHREBER. MINK.—Mr. Campbell states that there is a periodic fluctuation in the number of minks taken by trappers. During the summer of 1925 the species seemed to be uncommon, as none were seen by us, but during our stay a female and young were reported as having been seen near Mace.

Gulo luscus (LINNÆUS). WOLVERINE.—Mr. Campbell related to the writer that an Indian told him that he had trapped a wolverine southwest of the lake about 1890. This is the only record known to residents.

Lutra canadensis canadensis (SCHREBER). OTTER.—Mr. Campbell states that otter are not very plentiful, but are scattered over the whole region. Two skulls were picked up by us near an Indian trapper's cabin at Ghost river.

Mephitis mephitis (SCHREBER). SKUNK.—Noted by us at Camp 33 and reported by Mr. Campbell as being plentiful during the winter of 1925-26.

Vulpes fulva (DESMAREST). FOX.—Numerous in the forested "sand hills" north of Mace and also on Long point. We saw signs of fox at Camp 33, and they are said to occur fairly generally throughout the region. An Indian at Lowbush had a captive female with a litter of seven pups. A skull of this species was secured from Mr. Campbell.

Canis lycaon SCHREBER. WOLF.—No fresh signs of wolves were seen by us, and they were reported as not having been common of recent years, but appear to be increasing in numbers since the northern white-tailed deer has become established. Mr. Campbell states that he believes the wolves to be very destructive to beaver, preying upon them when they are active at night. Wolves seldom venture near the settlements in summer, but occasionally do so in winter. Their pelts appear regularly in spring with other furs when the Indians sell their winter's catch.

Lynx canadensis canadensis KERR. CANADA LYNX.—According to Mr. Campbell the lynx was very common during the winter of 1915-16, the last period of abundance of the varying hare, but subsequently became very rare. In this connection it is of interest to mention a prevalent opinion among the Indians of the region, that the lynx leaves for other fields after the hares die off. One Indian reported to Mr. Campbell that during the spring of 1916 he had seen signs which indicated that more than twenty lynx had been travelling, apparently together, in a northwesterly direction. The increase of the lynx is not very definitely correlated with that of the hare. The latter was extremely abundant during the summer of our stay in the region as well as during the previous winter, while the lynx was reported to be very scarce. It could not be expected that the lynx would become numerous within the next year or so when the hare will probably have become scarce.

Marmota monax canadensis (ERXLEBEN). WOODCHUCK.—Not generally distributed but fairly common in the drier situations, especially along the south shore of the lake. It seems to prefer the clearings adjacent to cabins, being found in such situations including clearings which had been but recently made. Four specimens were secured, the average measurements of two adults being, L., 500.5; T., 123.5; HF., 67.5.

Eutamias minimus borealis (ALLEN). WESTERN CHIPMUNK.—Not common and only to be found in the drier situations. The taking of three specimens of this species at Lake Abitibi is of par-

ticular interest in that they are examples of an eastern extension of a western group in the north. The measurements of the only undamaged specimen are, L., 215.5; T., 95; HF., 29.5.

Tamias striatus griseus MEARNS EASTERN CHIPMUNK.—Not common and only found in dry rocky situations. Of the three specimens secured two were bob-tailed, a feature commonly observed and one that has been discussed by Taverner (1922). The average measurements of the specimens secured are, L. (one specimen), 254; T. (one specimen), 95; HF., 34.5.

Sciurus hudsonicus hudsonicus (ERXLEBEN). RED SQUIRREL.—Fairly common, being found in a variety of situations. Specimens were secured in wet spruce areas, dry mixed forest, and open brulé at least a half mile from green timber. In the series of nineteen adults collected nearly all stages of changing coat are exhibited. One specimen taken on June 10 was almost entirely in winter coat. The average measurements of the nineteen specimens are, L., 281; T., 113.5; HF., 44.5.

Glaucomys sabrinus sabrinus (SHAW). NORTHERN FLYING SQUIRREL.—No specimens were secured by us, although baited traps were set on the roofs of buildings and other situations likely to be discovered by this species. Many are taken in the traps during the winter being attracted to the bait intended for other animals; in this way flying squirrels are a nuisance to trappers.

Castor canadensis canadensis KUHL. BEAVER.—Very scarce in the immediate vicinity of Lake Abitibi. Fresh skulls were found by us near a camp at Ghost river. No fresh signs of beaver-work were noted. In the region farther back from the lake, especially to the north, the beaver is still the principal objective of the Indian trapper and numbers are taken each year. Within the boundaries of a privately controlled muskrat farm twenty-five miles north of Lowbush, beavers are said to be increasing.

Peromyscus maniculatus maniculatus (WAGNER). WHITE-FOOTED MOUSE.—Probably the commonest mammal of the region during the summer of 1925. It was taken in traps set in dry woods, clearings and partial clearings, burned areas and about buildings. A line of thirty cheese-baited traps was set along a log road through a burned area

at Camp 33. The traps were not set at particularly favourable spots, but were placed approximately two paces apart, the trap line extending about one hundred and fifty feet. Sixteen white-footed mice were taken the first night, and eight more the following night. Although this brulé was very extensive, and the mice must have been abundantly distributed through it, we did not note any raptorial species of bird feeding there during our nine days' stay. Thirty-two specimens were preserved, the average measurements of twenty-two adults being, L., 182; T., 85.5; HF., 20. The largest specimen measured, L., 195; T., 96; HF. 21.

Phenacomys ungava ungava MERRIAM. LEMMING VOLE.—The occurrence of this species in the Lake Abitibi region has been established through the examination of the stomach contents of hawk owls collected there during the summer of 1925.[1] No specimens were collected by the Museum's field party. The situations inhabited by *Phenacomys* about Lake Abitibi were suggested by observations made on the hawk owls collected. Parent birds with flying young were frequently seen hunting along the borders of bays and creek beds where drowned and fallen trees lay in tangled confusion. These family groups from which specimens were taken were known to remain in restricted areas for several days, and it is logical to conclude that the *Phenacomys* found in the owl stomachs came from such a habitat. *Phenacomys* remains were found in the stomachs of hawk owls taken at Ghost river and Abitibi Company's camp 33.

Evotomys gapperi gapperi (VIGORS). RED-BACKED VOLE—This species was not very common, but was taken in several localities. It inhabited the mixed woods, dry, rocky situations covered with black spruce and moist woods near streams. Both the gray and the red-backed colour phases were secured. Of the sixteen specimens taken, nine are adults, the average measurements of eight being, L., 147; T., 42.5; HF., 18.75.The largest specimen measures, L., 157; T., 48; HF., 19.

Microtus pennsylvanicus fontigenus (BANGS). MEADOW VOLE.—Abundant, probably as numerous as *Peromyscus*. They occurred most frequently in wet, grassy situations. Such places could be found near the lake, along streams and on the railroad right-of-way.

[1]The Lake Abitibi record of this species will appear in "New Locality Records for *Phenacomys ungava ungava* in Ontario." Journal of Mammalogy.

All baits used attracted them, even the flesh of their own kind. They were even caught in cabins, but not as frequently as *Peromyscus*. Thirty-eight specimens were preserved, the average measurements for thirty adults being, L., 157.5; T., 42.5; HF., 19.5. The largest specimen measured L., 177; T., 50; HF., 21.

Microtus chrotorrhinus chrotorrhinus (MILLER). YELLOW-CHEEKED VOLE.—The species was taken only near Lowbush, although traps were set in apparently suitable situations elsewhere. The first specimen taken was caught in a trap set in the grass along the railroad right-of-way; others were subsequently caught in the same situation. They were also taken about tree-roots in moist, mixed woods composed of balsam fir, spruces, and poplar. It was not ascertained with certainty when this vole is most active, but traps set in the late afternoon contained specimens on the following morning. Record of the taking of this species at Lake Abitibi has been made elsewhere (Snyder, 1927). Eleven specimens were taken, the average measurement of five adults being, L., 156; T., 44.5; HF., 19.5.

Ondatra zibethica zibethica (LINNÆUS). MUSKRAT.—According to Mr. Campbell the muskrat is usually more numerous than we found it to be. It was rare in the immediate vicinity of the lake during the summer we were there, no fresh signs having been seen by any of our party. During the previous spring (1925) the water in the lake had fallen allowing the surface ice to cave in. According to Mr. Campbell this entombed many rats along the shore where they live in burrows, their floating bodies having been noted by residents in the spring after the ice went out. The privately owned muskrat farm, twenty-five miles north of Lowbush, has been reasonably successful in increasing these fur-bearers under natural conditions. The principal policy of this establishment is to provide protection and to increase the natural food supply and water habitat. Since this experiment embraces a township and lacks the element of semi-domestication, it is of interest from the point of view of conservation of the species in the wild state.

Zapus hudsonius hudsonius (ZIMMERMANN). JUMPING MOUSE.—We found this species to be rare in the region, but one specimen having been procured. This was taken in a steel trap set for wood-

chucks at the edge of a dry clearing near the lake shore at Ghost river. The measurements of this specimen are, L., 189; T., 115; HF., 29.5.

Napæozapus insignis abietorum (PREBLE). WOODLAND JUMPING MOUSE.—Two specimens were secured. One was taken beneath alders along the shore of the lake and the other in a dry poplar-balsam wood. The average measurements of these two specimens are as follows,—L., 228.5; T., 145; HF., 29.75.

Erethizon dorsatum dorsatum (LINNÆUS). PORCUPINE — Practically unknown in the region. An Indian stated that he had seen at least two in the hilly country south of the lake during the winter of 1923. Most of the region to the north is apparently too flat and wet for this species.

Lepus americanus americanus ERXLEBEN. VARYING HARE.— On our way northward over the Temiskaming and Northern Ontario Railway on May 31 it was apparent that the varying hare was abundant in the region. The trees and shrubs had not yet come in leaf, and the work of hares was visible for many miles along the track. The bark of young poplars, alders, willows, jackpine and an occasional spruce was stripped from the ground to a point above the recent snow-line. At Lowbush a trapper told of having found a dozen hare carcasses on his return from his trapping grounds, but during the following two and one-half months we found no dead hares except those killed by trains. At least thirty specimens were carefully examined for internal parasites or pathological conditions which might cause death, but all were found to be normal. Mr. Campbell has informed me that during the winter of 1925-26 the hare was still common. The previous period of abundance in the district was during the winter of 1915-16. Twelve specimens were preserved. The average measurements of six adults are, L., 399.75; HF., 130.5.

Odocoileus virginianus borealis (MILLER). WHITE-TAILED DEER.—Mr. Campbell stated that the first white-tailed deer was seen in 1906, but that it was very rare until 1921. Several were seen by us at our camps along the south shore of the lake, but it is still not common in the region. The spread of the deer into this area may be associated with two forest fires, one which occurred in 1911 and another in 1916, deer choosing to forage over burns where tender second-growth springs up.

Alces americana americana (CLINTON). MOOSE.—An Indian living in Lowbush stated that he was one year old (about 1875) when his father killed the first moose in the Lake Abitibi region. Tracks had been seen previously, but the Indians did not know what animal had made them. We found the moose plentiful and generally distributed.

Rangifer caribou (GMELIN). WOODLAND CARIBOU.—Until about 1921 caribou used to appear regularly in winter at Lake Abitibi, but since then they have not been known to come nearer than fifteen miles north of Lowbush. At one time a few used to summer on the islands of the lake. Locally the disappearance of the species has been variously attributed to forest fires, the increase of moose, and the incoming of the white-tailed deer.

LITERATURE CITED

SNYDER, L. L. 1927. Microtus chrotorrhinus chrotorrhinus from Lowbush, Lake Abitibi, Ontario. Journal of Mammalogy. **8**: 311.

TAVERNER, P. A. 1922. Mutilated tails. Can. Field-Nat. **36**: 119.

THE SUMMER BIRDS OF LAKE ABITIBI

By L. L. Snyder

Introduction and Acknowledgements

Past experience has shown that with normal spring conditions the northern migratory movement of birds has practically ceased throughout the evergreen forest of northern Ontario by June 1, and that after that date the bird life to be found in each section is very largely made up of species which breed within that section. On the other hand nesting duties have not advanced far. For these reasons our survey of the summer birds of the Lake Abitibi region was planned to commence on June 1.

At Lowbush, a trading post situated at the junction of the Circle and Lowbush rivers, one mile west of Lake Abitibi, a headquarters camp was established in a large, comfortable building belonging to the Abitibi Power and Paper Company. Collecting was commenced on the following day and continued at Lowbush until June 16, when we removed to the Narrows, a strait connecting the upper and lower lakes. A nine days' stay was made at this camp and the surrounding region reconnoitred. On the 25th we removed to a camp at the mouth of the Ghost river on the south side of the upper lake. On July 4 we again broke camp and moved to the abandoned buildings of the Abitibi Power and Paper Company at their camp 33. We remained here until July 13, when we returned to Lowbush. Information secured from residents of Lowbush, from the field men of the Abitibi Power and Paper Company, and from our own observations made en route between camps, indicated that we had visited the more important locations from the standpoint of habitats. From Lowbush brief visits were made to other points on the lower lake. All camps made and other points visited are indicated on the accompanying map. Collecting was concluded on August 3.

During the summer 245 specimens were collected. In addition to these the stomachs of all birds collected were preserved and catalogued, and a number of external and internal parasites obtained. A few nestlings

were preserved in alcohol. Although comparatively few nests with eggs were collected, a considerable number of breeding records was established by other evidence.

The specimens secured represent 85 species, while 17 other species which were not collected are included in the following list because of positive sight records.

The writer wishes to thank Mr. J. L. Baillie of the Museum staff for his work in the field and for the use of his notes made during the summer, and Mr. W. J. LeRay for his assistance with the bird work.

ANNOTATED LIST

A few species of birds such as the sharp-tailed grouse and bald eagle were reported to us as occurring in the region in summer, but since our observations did not verify these statements it has been considered best to omit them from the list, even though they are probably correct. Such reports appear to have been made as a result of our questioning rather than through an accurate knowledge of summer resident birds.

The systematic arrangement of the 102 species here recorded is that of the 1910 edition of the American Ornithologists' Union Check List. The nomenclature used is that of the same edition, with such changes as have been made in the supplements published in the 'Auk'.

A catalogue of the specimens secured is given after each species. All young of the year are indicated as "yg". Where no mention is made of a species breeding in the region it is because positive data were not secured.

Gavia immer. LOON.—A single specimen was seen on Trollope lake (a few miles inland up the Lightning river) by J. R. Dymond on July 10. From our camp at the mouth of the Ghost river a loon was heard out on the lake on two occasions, June 30 and July 4. It seems that the shallow, frequently disturbed water of Lake Abitibi is not particularly suitable to the species. To judge from the colour of the turbid water at times, the visibility for hunting fish-prey would be very poor.

Larus argentatus. HERRING GULL.—A fairly common species about certain areas of the lake, but practically absent from others. They nest on at least one rocky island in the upper lake.

2 yg. ♂'s June 19, Island off Narrows, upper lake.

Larus philadelphia. BONAPARTE'S GULL.—Two specimens were seen associating with common terns at Shea's bay on July 25. A single individual was again observed at the same place on July 28. These were dark-headed birds.

Sterna hirundo. COMMON TERN.—Fairly numerous on the lake as a whole and almost continuously in sight at the Narrows where they passed to and from the upper and lower lakes. These terns are known to breed on at least two rock islands, one in the upper and one in the lower lake.

♂ June 18, Narrows. yg. ? July 17, Island off Narrows, upper lake.
2♂'s " 20, " yg. ♂ " " " " " " " "
♀ " 20, " 2 " ♀'s " " " " " " " "

Mergus sp.?. MERGANSER.—A single bird was seen at Red Pine point on July 24, but the specific determination could not be made. As suggested in connection with the loon, these ducks probably do not find Lake Abitibi a suitable habitat.

Anas rubripes. BLACK DUCK.—A few were seen at every camp made on the lake. They nest along the flooded creek beds and shallow bays. A female was flushed from a grass nest (containing no down) situated on drift brush overgrown with marsh grass on July 2 at Ghost river. The nine eggs in the set collected were fresh, a seemingly unusual condition for that date. Another female was flushed from the wooded bank of a creek at Camp 33. She had unhesitatingly abandoned her young, which scattered and hid. One young was secured from a small hole in the ground two feet down from the surface.

yg. ♀ July 8, Camp 33.

Marila collaris. RING-NECKED DUCK.—The single specimen secured is the only positive record of the occurrence of the species at Lake Abitibi, but on July 10, at Camp 33, another female (apparently *collaris*) was seen.

♀ July 2, Ghost river.

Glaucionetta clangula americana. GOLDEN-EYE.—Females and downy young were regularly seen at Ghost river and Camp 33. They were rarely noted elsewhere, seeming to prefer the streams and quiet bays of the lake. Prior to the first appearance of the young, about the third week

in June, females were noted more often at dusk when they came out to feed. As many as nine were observed together sporting noisily about a shallow bay near our camp at Ghost river. No males were noted.

	♀	June	29,	Ghost	river.		yg.	?	June	30,	Ghost river.
yg.	♂	"	"	"	"	2	"	♂'s	"	"	" "
2 yg.	♀'s	"	"	"	"	3	"	♀'s	"	"	" "
	♀	"	30	"	"						

Branta canadensis canadensis. CANADA GOOSE.—On the evening of June 5 we were told by a fire ranger at Lowbush that he had seen a large gray goose at Shea's bay on that afternoon. The following morning we visited the bay which is about two miles east of Lowbush. Here, there is an extensive flooded area grown up with scrub. Although we could not find the specimen, twice we heard the unmistakable call of a Canada goose. It was not heard or seen subsequently although we visited the area frequently. The specimen was probably a belated migrant, perhaps an injured bird.

Botaurus lentiginosus. BITTERN.—Bitterns were rarely seen. One came fairly regularly to the mouth of a creek to feed while we were at Camp 33.

♀ July 6, Camp 33.

Ardea herodias herodias. GREAT BLUE HERON.—This species was recorded from each of the camps on the lake, but only single birds were seen. No information was secured from residents which suggested the presence of a heronry near the lake.

Porzana carolina. SORA.—Late in the evening of July 3, a sora was collected from the flooded edge of the Ghost river near our camp. The species was not seen or heard before or after that date.

♂ July 3, Ghost river.

Tringa solitaria solitaria. SOLITARY SANDPIPER.—A few of these birds were seen along the railroad right-of-way at Lowbush at different times after July 11. Although they were noted irregularly their habit of perching on the tops of coniferous trees made them especially conspicuous when they were observed. On July 31, a solitary sandpiper was observed flying about in wide circles over Shea's bay uttering distinctive, clear notes.

♀ July 11, Lowbush.

Actitis macularia. SPOTTED SANDPIPER.—Found in a number of localities, but it is apparent that a considerable area which was formerly a habitat for spotted sandpipers is now covered by water due to the raising of the lake level. A clutch of four fresh eggs was found on June 17 at the Narrows. The male was flushed from the nest several times prior to the full complement of eggs having been deposited. To verify our previous sex determinations the male was collected from the nest when the eggs were taken, June 21.

♂ June 8, Lowbush. yg. ? July 20, Lowbush.
♂ " 21, Narrows.

Oxyechus vociferus. KILLDEER.—A killdeer was seen at Lowbush on June 3 and on June 6, possibly the same individual. No others were seen during the summer. Raising the lake level doubtless removed extensive areas where this species could breed.

Canachites canadensis subsp.?. SPRUCE PARTRIDGE.—This species was decidedly rare, only one having been seen during the summer. This was observed west of Lowbush on July 20 by J. R. Dymond and A. L. Pritchard. Terrill (1913) records the spruce partridge in this region under the name *C.c. canace*, but it is more probably *canadensis*.

Bonasa umbellus togata. CANADA RUFFED GROUSE.—Scarce during the summer of 1925 but according to reports they had been common the previous year. We had difficulty in securing four adult specimens. These seem to be extremely dark dorsally, only part of which can be attributed to wear. They are provisionally referred to *togata*, there being insufficient material to make a satisfactory study of the birds of this region. The species breeds in the area.

♂ June 21, Narrows. yg. ♀ June 25, Narrows.
♂ " 22, " ♀ July 22, Lowbush.
4 yg. ♂'s " 25, " ♀ " 23, "

Circus hudsonius. MARSH HAWK.—Observed on two occasions at Lowbush and once at Ghost river. In each instance the birds were out of collecting range, flying low over open muskeg or swampy marsh.

Accipiter velox. SHARP-SHINNED HAWK.—Noted on a few occasions at Lowbush and once at Camp 33.

♂ July 17, Lowbush.

Buteo borealis borealis. RED-TAILED HAWK.—A single adult was seen a few miles up the Ghost river on June 30. It was perched in an open position, allowing examination with the binoculars, but was too wary to be secured.

Buteo lineatus lineatus. RED-SHOULDERED HAWK.—Heard and seen on a few occasions near Lowbush, but on each occasion the birds were out of range for collecting.

Buteo platypterus. BROAD-WINGED HAWK.—Not particularly numerous, but seen occasionally at three camps on the lake. This species is the commonest hawk of the region.

♂ June 11, Lowbush.

Falco columbarius columbarius. PIGEON HAWK.—Met with on one occasion only. The two young taken from a family on Coney island, July 25, were not fully feathered and were doubtless reared on the island.

yg. ? July 25, Coney island. yg. ♀ July 25, Coney island.

Cerchneis sparveria sparveria. SPARROW HAWK.—Noted occasionally at three of the camps on the lake. The young one collected on August 3 was not yet fully feathered.

♀ July 7, Camp 33. yg. ♂ Aug. 3, Kaminisinswka river.
♂ " 8, " "

Pandion haliaëtus carolinensis. OSPREY.—A pair was observed at South bay on the west side of the Narrows and a nesting pair was found at Ghost river. Reports from Indians and other residents of Lowbush indicate that ospreys occur sparingly throughout the region. The occupied nest found at Ghost river was situated approximately seventy-five feet from the ground in the dead and broken top of a balsam poplar.

♂ June 27, Ghost river.

Bubo virginianus subsp.?. GREAT HORNED OWL.—Heard or seen at three localities on the Lake,—Shea's bay, the Narrows and Abitibi Camp No. 3. Although no specimens were secured, a few breast feathers picked up at Shea's bay suggested the bird to be the eastern from, *virginianus*, although *subarcticus* has been recorded as breeding in this section of Ontario (Fleming 1913).

Surnia ulula caparoch HAWK OWL.—Met with on several occasions in swampy situations at Shea's bay, Ghost river, and Camp 33.

The notes of the young birds are decidedly like those of the broad-winged hawk, except that the high-pitched, hissing sound ascends slightly towards the end. An adult was observed hunting mice for its flying young along a creek bed at Camp 33. The hissing calls of its four or five young could be heard from as many directions, unquestionable reminders to the parent that they were there, and hungry. The parent, leaving its perch in the open, gently settled for an instant in the grassy edge of the creek and rose with a meadow mouse in its feet. One of the young was quieted, but before the parent could serve the rest, this young one resumed its calling. One family met with on June 29 had apparently been out of the nest but a few days. No positive evidence that the species breeds in Ontario has previously been published. Adult birds were seen to assume at times an attitude very unlike that of an owl. The tail would be "cocked up" at an angle of 45 degrees to the back, being held in this position for a considerable period.

The plumage of the juveniles collected varies somewhat in shade of colour, but a distinct plumage phase at this age can be described. For this purpose I select a young bird now in the collection of Mr. J. H. Fleming, which was shot at Abitibi Camp 33 on July 8. Upper parts including back, tail (not upper tail coverts) and wings dark "blackish brown (3)"; the primaries, secondaries, tertials and greater wing coverts (near the carpal joint) marked with rounded or irregular white spots, the central pair of tail feathers indistinctly barred with whitish or dirty white, the others barred on the outer web in the same manner while the inner web has white bars which alternate with those of the outer; tail feathers heavily tipped with white. The structurally loose, woolly feathers of the crown, occiput and nape "fuscous" fading centrally to "mouse gray" and topped with whitish. Facial disc feathers "pale olive buff", approximately the terminal one-half of the feathers forming the lateral border of the disc, black, or nearly so. The hair-like feathers of the loral region, black. A broad patch or belt of "dark blackish brown (3)" crossing the upper breast, same being somewhat narrowed on the median line. Feathers of the breast, narrowly barred with whitish and "clove brown", the whitish changing to dirty "pale ochraceous-buff" and the brown to "natal brown" along the median line and on the woolly feathers of the belly, flanks and under and upper tail coverts. Feathers of the tarsi and feet dirty "pale ochraceous-buff", indistinctly barred with grayish brown. In younger specimens the crown, occiput and nape

have a "frosted" appearance from the white-tipped, woolly feathers. Also the upper wing coverts tend more to mouse gray instead of the dark blackish brown. A young bird taken on July 28 had almost attained the adult plumage. A few of the gray feathers of the head remain. The brown barring of the under parts is distinctly of a red-brown shade.

	♂	June	6,	Lowbush.	4 yg.	♀'s	June 29,	Ghost river.
	♀	"	29,	Ghost river.	"	♀	July 8,	Camp 33.
yg.	♂	"	29,	" "	"	♀	" 28,	Lowbush.

Ceryle alcyon alcyon. BELTED KINGFISHER.—Very few seen, and nesting sites were not discovered by us.

♂ June 28, Ghost river.

Dryobates villosus leucomelas. NORTHERN HAIRY WOODPECKER.—Not numerous but seen fairly regularly. One breeding pair was found with its nesting-cavity situated 40 feet from the ground in the trunk of a living aspen poplar. The four young which the nest contained were collected.

	♂	June	11,	Lowbush.	3 yg	♂'s	June 11,	Lowbush.
	♀	"	"	"	"	♀	" "	"

Dryobates pubescens medianus. DOWNY WOODPECKER.—Seen more frequently than the hairy woodpecker, but certainly not common.

♂ June 6, Lowbush.

Picoides arcticus. ARCTIC THREE-TOED WOODPECKER.—Seen fairly frequently. Two occupied nesting-holes were discovered, one being located in a telegraph pole. Two young, taken from a nest four feet from the ground in a dead balsam poplar had yellow crowns, although both proved to be females.

	♂	June	1,	Lowbush.	2 yg.	♀'s	June 23,	Narrows.
	♀	"	4,	"	"	?	July 22,	Lowbush.
	♀	"	23,	Narrows.				

Picoides americanus americanus. THREE-TOED WOODPECKER.—Although not numerous this species was observed several times at the Narrows, at Camp 33, and at Shea's bay. It breeds in the region, a young bird not long out of the nest having been collected. This appears to be the second record of the species breeding in Ontario, the other being that of Forster (1772).

	♂	June	19,	Narrows.		♂	July 18,	Lowbush.
	♀	"	5,	Camp 33.	yg.	♀	July 18,	"
	♂	July	15,	Lowbush.				

Sphyrapicus varius varius. YELLOW-BELLIED SAPSUCKER.—The commonest woodpecker of the region. The three occupied nesting-cavities found were all in dead trees and were from thirty to fifty feet fromthe ground.

♂ June 2, Lowbush. ♀ July 2, Ghost river.
♂ " 11, "

Phlœotomus pileatus abieticola. NORTHERN PILEATED WOODPECKER.—There appeared to be very few in the district, to judge by the number seen. Their characteristic drillings and large nesting-cavities were not noted by us.

♂ June 29, Ghost river.

Colaptes auratus borealis. BOREAL FLICKER.—Observed regularly, but not very numerous. Found breeding in two localities.

♂ June 20, Narrows. ♀ July 24, Lowbush.
yg. ♂ July 22, Lowbush.

Chordeiles virginianus virginianus. NIGHTHAWK.—Not very common for the region as a whole, but noted at several localities on the lake. As many as twenty individuals were seen feeding over the mouth of the Ghost river on the evening of July 1.

♀ July 1, Ghost river. ♀ July 22, Lowbush.

Archilochus colubris. RUBY-THROATED HUMMINGBIRD.—Seen occasionally, but not regularly.

♂ June 23, Narrows.

Tyrannus tyrannus. KINGBIRD.—A few pairs were noted inhabiting the standing dead trees in the bays at three of the camps on the lake, but no nests were found.

♀ June 6, Lowbush.

Sayornis phœbe. PHŒBE.—Noted on three occasions at Lowbush, but no nests could be located.

♂ June 14, Lowbush. ♀ July 16, Lowbush.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—Fairly common. Breeds, partially feathered young having been collected.

♂ June 4, Lowbush. yg. ♂ July 30, Lowbush.
♀ July 22, " " ♀ " " "
♂ " 28, "

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—Noted at several localities, but as is usually the case with this species, only single birds or pairs were to be found frequenting a suitable habitat.

? June 10, Lowbush. ♂ June 19, South bay.
♀ " " "

Empidonax trailli alnorum. ALDER FLYCATCHER.—Fairly numerous. Adults were seen carrying food to young.

♂ June 3, Lowbush. ♂ June 20, Narrows.
♂ " 13, " ♂ July 22, Lowbush.

Empidonax minimus. LEAST FLYCATCHER.—Fairly numerous. A nest containing two eggs and two newly hatched young was found eight feet from the ground in a mountain maple on Coney island, on July 25.

♂ June 8, Lowbush. ♀ June 20, Narrows.

Cyanocitta cristata cristata. BLUE JAY.—Rare in the region; one seen at Lowbush and one at the Narrows.

♂ June 19, Narrows.

Perisoreus canadensis canadensis. CANADA JAY.—Not a common species and seen at irregular intervals. The young birds secured were more fully feathered than adults at that season and were strikingly darker in colour.

yg. ♀ June 3, Lowbush. 3 yg. ♂'s June 4, Lowbush.
♂ " 4, " ♀ June 10, "
♀ " 4, " yg. ♂ " 10, "

Corvus brachyrhynchos brachyrhynchos. CROW.—Scarce and extremely wary. An adult with flying young was observed near Lowbush on July 26.

Agelaius phœniceus phœniceus. RED-WINGED BLACKBIRD.—Fairly numerous in the marshy area at Shea's bay, but only a few pairs were noted elsewhere. Females were seen carrying food to their young.

♂ July 6, Camp 33.

Euphagus carolinus. RUSTY BLACKBIRD.—A fairly common species, inhabiting the borders of the lake where brush and aquatic vegetation choke the shores. Partially feathered young were observed and collected. A female collected on June 8 contained four eggs, one ready to be deposited.

♂ June 8, Lowbush. ♂ June 10, Lowbush.
♀ " 8, " yg. ? July 30, "

Quiscalus quiscula æneus. BRONZED GRACKLE.—Quite numerous about the bays where there were standing, drowned trees. Observing the worn condition of the tails of several females, cavities of dead trees were investigated with the result that grackles were found to be nesting in them.

♂ June 5, Lowbush.

Pinicola enucleator leucura. PINE GROSBEAK.—Of the two specimens seen during the summer, only one, a female, was collected. The other, a strikingly pinkish-red individual, seen at Ghost river, was not secured.

♀ June 20, Narrows.

Carpodacus purpureus purpureus. PURPLE FINCH.—Fairly common. Although single singing males were observed, especially in early summer, the species was found in flocks throughout the summer.

♂ June 3, Lowbush. ♂ June 22, Narrows.
♀ " 13, " yg. ♂ July 16, Lowbush.

Loxia leucoptera. WHITE-WINGED CROSSBILL.—A flock of 28 was seen near Camp 33 on July 11 and another flock of approximately twenty near Lowbush on July 17 and again on Aug. 1. No good opportunity to collect a number of these birds occurred. The compact, chattering flocks passing high overhead flew considerable distances between stops. When they did settle to feed in the spruce, they became quiet and consequently difficult to locate.

♂ July 17, Lowbush.

Astragalinus tristis tristis. GOLDFINCH.—Rather scarce about the lake as a whole. No specimens or breeding evidence obtained.

Spinus pinus. PINE SISKIN.—Not especially numerous, but seen occasionally at most situations visited on the lake. The largest flock seen, which was composed of about fifty individuals, was observed at Lowbush on June 15.

♂ June 13, Lowbush. ♂ June 23, Narrows.

Passer domesticus. HOUSE SPARROW.—Three extremely wary individuals were seen regularly at Lowbush, and although both sexes were represented a nest could not be found. Residents did not know this bird particularly well and it seems that the species is as yet not well established at Lowbush, although we observed that they were numerous and nesting at Cochrane, forty miles west.

♂ July 18, Lowbush.

Poœcetes gramineus gramineus. VESPER SPARROW.—At least two singing males were established on a cleared hillside at Lowbush. The species was also observed at Red Pine point.

♂ June 5, Lowbush. ♂ July 24, Red Pine point.

Passerculus sandwichensis savanna. SAVANNAH SPARROW.—A singing male was shot at, but escaped at Shea's bay on June 8. Although this area was one in which the species might have been expected in some numbers, no other specimen was observed.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—The commonest bird of the region and known to breed.

♂ June 1, Lowbush. ♂ July 9, Camp 33.
♀ June 4, " yg. ♀ July 15, Lowbush.
♂ June 8, "

Spizella monticola monticola. TREE SPARROW.—A singing male was collected at the Narrows on June 21. Dissection showed it to be in breeding condition, but it had doubtless been left behind in the northern movement of the species, probably because of injuries. The left wing near the carpal joint exhibited a small, bare scar, but the bird was otherwise in normal condition and in full summer plumage.

♂ June 21, Narrows.

Spizella passerina passerina. CHIPPING SPARROW.—Seen only at Lowbush where a few pairs were known to be established, but no nests were found.

♀ June 12, Lowbush.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO.—Fairly common in the region as a whole. A nest with four young about a week old was found on the ground in a clearing at the mouth of the Lightning river.

♀ June 2, Lowbush. ♀ June 19, Narrows.
♂ " 6, " ♂ July 1, Ghost river.
2 ♂'s " 8, " ♀ July 7, Camp 33.
♂ " 12, "

Melospiza melodia melodia. SONG SPARROW.—The song sparrows of the Abitibi district resemble those of the Toronto region more closely than they do those from Lake Nipigon and are therefore regarded as belonging to the sub-species *melodia*, the Lake Nipigon form having been recognized as *juddi* (Snyder, 1928).

The song sparrow was generally distributed throughout the Lake Abitibi region and was almost if not quite equal to the white-throated sparrow in abundance. A nest containing five fresh eggs was found at the Narrows on June 17.

♂ June 4, Lowbush.
♀ " 4, "
♀ June 20, Narrows.
♂ " 22, "
♂ June 23, Narrows.
♂ " 28, Ghost river.
♀ June 29, " "
2 ♀'s July 7, Camp 33.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.—Not very common in the region as a whole, but quite numerous at Shea's bay, Camp 33, and Red Pine point. On July 24, an adult was seen feeding young.

3 ♂'s June 6, Lowbush.
♀ June 6, Lowbush.

Melospiza georgiana. SWAMP SPARROW.—A common species in suitable situations.

2 ♂'s June 6, Lowbush.
♂ " 21, Narrows.
♂ June 23, Narrows.

Hedymeles ludovicianus. ROSE-BREASTED GROSBEAK.—A single male specimen was seen at the mouth of the Ghost river on July 8, by J. R. Dymond.

Calamospiza melanocorys. LARK BUNTING.—The specimen collected at Lowbush has been recorded elsewhere (Snyder, 1927). It constitutes the first record of the species for Ontario. Its occurrence at Lake Abitibi in summer suggests that it may be found as a breeding bird elsewhere in northern Ontario. Examination of the ovaries of this specimen showed that it was undoubtedly in breeding condition.

♀ June 5, Lowbush.

Iridoprocne bicolor. TREE SWALLOW.—Common and known to nest in the standing, drowned trees bordering many of the bays. This species has probably increased since the raising of the lake level. On at least one occasion a pair of these birds was observed copulating while on the wing.

♂ June 6, Lowbush.
♀ June 6, Lowbush.

Bombycilla cedrorum. CEDAR WAXWING.—Fairly common but no nests were found.

2 ♂'s June 6, Lowbush.
♂ June 21, Narrows.

Vireosylva olivacea. RED-EYED VIREO.—Fairly common and found nesting.

♂ June 3, Lowbush. ♀ June 22, Narrows.

Vireosylva philadelphica. PHILADELPHIA VIREO.—In comparison with the red-eyed vireo this species was relatively scarce, but it was observed at three of the camps on the lake.

♀ June 8, Lowbush. ♂ June 27, Ghost river.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO.—Only five individuals were seen during the summer.

♂ June 27, Ghost river. ♂ July 21, Lowbush.

Mniotilta varia. BLACK AND WHITE WARBLER.—Not particularly numerous, but generally distributed and known to breed in the area.

♂ June 23, Narrows. ♂ June 26, Ghost river.

Vermivora ruficapilla ruficapilla. NASHVILLE WARBLER.—Observed on very few occasions at Lowbush and once at the Narrows.

♂ June 19, Lowbush. ♂ July 17, Lowbush.

Vermivora peregrina. TENNESSEE WARBLER.—More numerous than the preceding, but not very common for the lake as a whole. It was common about the Narrows camp.

? June 6, Lowbush. ♂ June 11, Lowbush.

Compsothlypis americana pusilla. NORTHERN PARULA WARBLER.—Fairly numerous in certain areas particularly at Ghost river, but entirely absent in others where apparently suitable habitats were present.

♂ June 3, Lowbush. ♂ June 13, Lowbush.
♂ " 5, " ♂ June 27, Ghost river.

Dendroica tigrina. CAPE MAY WARBLER.—Rare. Observed only near our Ghost river camp. A male was heard to sing four or five high-pitched notes, all on the same pitch. The song resembled that of the bay-breasted warbler, but was not so slurred.

♂ June 27, Ghost river. ♂ July 2, Ghost river.

Dendroica æstiva æstiva. YELLOW WARBLER.—Not very common for the lake as a whole. A newly made nest was found in young poplars at Ghost river camp on June 26.

♂ June 6, Lowbush. ♂ June 23, Narrows.
♀ June 21, Narrows.

Dendroica coronata. MYRTLE WARBLER.—The commonest warbler of the region. A nest with young was found on June 28, twenty feet from the ground in the top of a young white spruce at Ghost river.

♂ June 2, Lowbush. ♀ June 19, Narrows.
♀ June 11, "

Dendroica magnolia. MAGNOLIA WARBLER.—Fairly common and known to breed, partly feathered young just out of the nest having been observed with adults.

2 ♂'s June 3, Lowbush. ♂ July 5, Camp 33.
♀ June 6, "

Dendroica pensylvanica. CHESTNUT-SIDED WARBLER.—A single specimen was taken at Red Pine point. It seems probable that the species reaches its northern limit in this region.

♀ July 24, Red Pine point.

Dendroica castanea. BAY-BREASTED WARBLER.—Fairly common. Young not long out of the nest were observed with parents.

♂ June 5, Lowbush. ♂ June 18, Narrows.
♂ " 13, "

Dendroica fusca. BLACKBURNIAN WARBLER.—Rather rare. A few individuals were observed at Lowbush and single specimens at Ghost river and at Camp 33.

♂ June 2, Lowbush. ♀ June 29, Ghost river.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—Not very numerous, but heard and seen fairly regularly.

♂ June 5, Lowbush.

Seiurus aurocapillus. OVEN-BIRD.—Observed fairly regularly in suitable woods, but the species was not particularly numerous.

♂ June 11, Lowbush.

Seiurus noveboracensis noveboracensis. WATER-THRUSH.—Surprisingly numerous. Common about the flooded shores of the lake where brushy cover and debris filled the shallow borders. Parents were frequently seen collecting and carrying food to their young which, however, were not discovered.

♂ June 6, Lowbush. ♀ June 27, Ghost river.
♂ June 8, "

Oporornis agilis. CONNECTICUT WARBLER.—This species was heard in full song by Mr. Baillie and myself separately, but in the same tract of swamp near Lowbush on June 3. Unfortunately neither of us was able to secure the specimen.

Oporornis philadelphia. MOURNING WARBLER.—Regularly observed, but not very common.

♂ June 6, Lowbush. ♀ July 10, Camp 33.
♂ July 7, Camp 33. ♀ " 15, Lowbush.

Wilsonia pusilla pusilla. WILSON'S WARBLER.—Found at Lowbush, Red Pine point and Shea's bay. An adult was observed carrying food to its young, which, however, could not be located, although the parent was apparently successful on several occasions in administering food while we were searching for it. A female taken on June 3 had a complete black crown.

♀ June 3, Lowbush. ♂ June 4, Lowbush.

Wilsonia canadensis. CANADA WARBLER —Generally distributed, but not particularly numerous.

♂ June 12, Lowbush. ♀ July 5, Camp 33.
♂ " 23, Narrows.

Setophaga ruticilla. REDSTART.—A fairly common species and known to breed in the district. A note regarding a female singing has been published by Baillie (1926).

♀ June 3, Lowbush. ♂ June 23, Narrows.
♂ " 8, "

Troglodytes ædon ædon. HOUSE WREN.—Found only at Camp 33 where it was a fairly common species in the extensive brulé. Two occupied nests were found in hollow stumps and flying young were collected.

♀ July 7, Camp 33. yg. ♂ July 8, Camp 33.
♂ " 8, " ♀ " 10, " "

Nannus hiemalis hiemalis. WINTER WREN.—Generally distributed, but as usual not very numerous.

♂ June 2, Lowbush.

Certhia familiaris americana. BROWN CREEPER.—Few in numbers, but observed at all camps made on the lake.

? June 5, Lowbush. ♂ June 19, South bay.

Sitta canadensis. RED-BREASTED NUTHATCH.—Generally distributed, but few in number. A pair nested in a tall dead rampike near Lowbush. The cavity used was situated over sixty feet from the ground and appeared to be an old woodpecker hole.

♂ June 5, Lowbush. ♀ July 15, Lowbush.

Penthestes atricapillus atricapillus. CHICKADEE.—Not plentiful. Family flocks were seen on one or two occasions after midsummer.

♂ June 10, Lowbush. yg. ♂ July 17, Lowbush.
♂ July 2, Ghost river.

Penthestes hudsonicus hudsonicus. HUDSONIAN CHICKADEE.—Rather scarce, but about as numerous as was the chickadee. A young bird was collected from a family flock on July 15 in a black spruce bog.

♂ June 19, Narrows. yg. ♂ July 15, Lowbush.

Regulus satrapa satrapa. GOLDEN-CROWNED KINGLET.—Rare in the region as a whole.

♂ June 11, Lowbush.

Regulus calendula calendula. RUBY-CROWNED KINGLET.—Fairly common.

♂ June 9, Lowbush. ♂ June 10, Lowbush.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.—Common. A nest containing three fresh eggs was found on July 11, at Camp 33. The nest was placed in the forked branches of speckled alder near the lake shore and was approximately six feet from the ground.

♂ June 9, Lowbush. ♂ June 23, Narrows.
2 ♂'s " 10, " ♀ July 11, Camp 33.
♂ " 13, "

Hylocichla guttata pallasi. HERMIT THRUSH.—Although heard and seen near Lowbush, the extraordinary shyness of the few birds seen and the density of the vegetation in their habitat prevented us from securing a specimen.

Planesticus migratorius migratorius. ROBIN.—Fairly common and generally distributed. A nest with three heavily-incubated eggs was found at Lowbush on June 13.

♀ June 6, Lowbush. yg. ♂ July 14, Lowbush.
♂ " 10, " ♀ " 28, "

Sialia sialis sialis. BLUEBIRD—Scarce. Two pairs were observed at Lowbush and a nesting pair was found at Camp 33.

♂ June 3, Lowbush. ♀ June 3, Lowbush.

LITERATURE CITED

BAILLIE, J. L. Jr., 1926. Female redstart singing. Can. Field-Nat. **40**: 184.

FLEMING, J. H. 1913. Ontario bird notes. Auk. **30**: 227.

FORSTER, J. R. 1772. An account of the birds sent from Hudson's bay; with observations relative to their natural history; and Latin descriptions of some of the most uncommon. Phil. Trans. London **62**: 388.

SNYDER, L. L. 1927. First record of the lark bunting for Ontario. Auk. **43**: 375.

SNYDER, L. L. 1928. The summer birds of Lake Nipigon. Trans. Roy. Can. Inst., **16**: 251-277.

TERRILL, L. M. 1913. Bird notes. Ottawa Naturalist. **27**: 76.

THE AMPHIBIANS AND REPTILES OF THE LAKE ABITIBI REGION

By J. R. Dymond

The following records are based on a collection made in the vicinity of Lake Abitibi during the months of June and July, 1925. The collection was made chiefly by Mr. W. J. LeRay and the writer, although other members of the party picked up occasional specimens and contributed information secured incidentally while they were engaged in bird and mammal collecting.

Owing to the fact that only two months were spent in the region, the list is probably incomplete, but it undoubtedly contains all of the species that are at all common in the area covered. The shores of Lake Abitibi present large areas which appear to be eminently suited to turtles and the water snake, and it was rather a surprise to us that not a single specimen of either was found.

Bufo americanus Holbrook. AMERICAN TOAD.—The toad was not uncommon in clearings. Most of the specimens seen had the colour pattern sharply defined, the ground colour being quite a light greenish gray and the dark mottlings brown or black. Many were strongly tinged with reddish.

Hyla crucifer Wied. SPRING PEEPER.—No specimens of this tree-frog were taken, but its song was heard on a number of occasions.

Rana cantabrigensis Baird. NORTHERN WOOD FROG.—This was the most abundant frog of the region. It was generally distributed in the wooded areas.

Rana clamitans Latreille. GREEN FROG.—The only green frog seen was taken beside the Lowbush river near the falls about five miles from the mouth.

Rana pipiens Schreber. LEOPARD FROG.—Leopard frogs were seen on a number of occasions, especially in the vicinity of Shea's bay.

Rana septentrionalis Baird. MINK FROG.—Three specimens of this species were seen, but only two of them were captured. These indi-

viduals were found in a small patch of sphagnum beside Chesney's lake which is situated near the base of Long point.

Thamnophis sirtalis (LINN.) GARTER SNAKE.—This was the only species of snake found in the region. One specimen had the whole lower sides from the upper margin of the lateral light stripes, a brilliant red, shading to a reddish orange on the ventral plates. The lower dark stripe was entirely obliterated except for a few small spots of dark colour between some of the scales. On the head the red colour extended to the dorsal surface, the snout and the whole side of the face to the upper margin of the orbit being bright red. From the snout the reddish colour gradually faded posteriorly. The dorsal light stripe was not invaded by red except in its most anterior portion. That this specimen was not unusual is attested by the fact that the Indians told us of the existence of red snakes in the district before this specimen was found. Another individual had red on the anterior half of the lateral light stripe.

In view of the fact that Ruthven in his study of the garter snakes (Bull. 61, U.S. Nat'l. Mus. p. 38, 1908) found a tendency to the production of red pigment on the Great Plains and a marked increase in bright colour (bright reds and greens) in the Pacific Coast region, the occurrence of these reddish marked garter snakes in this area is believed to be significant when considered in conjunction with the western tendencies of a number of other elements of the fauna, as mentioned in the general introduction.

THE ODONATA (DRAGONFLIES) OF THE LAKE ABITIBI REGION

By E. M. Walker

During the season of 1925 a large collection of insects was made at Lake Abitibi by Mr. N. K. Bigelow as a contribution to a biological survey of the lake, undertaken by the Royal Ontario Museum of Zoology and the Ontario Fisheries Research Laboratory. Mr. Bigelow collected from early June to late August, giving special attention to the Diptera, Hymenoptera, and Coleoptera, but species of all orders were taken and among them a fair number of Odonata. These were taken mainly in the vicinity of Lowbush, on the north shore of the lower lake, and at Long point, also on the lower lake. The writer joined the party at Lowbush on July 6 and collected mainly at this locality and on the lower reaches of the Ghost river, on the south side of the upper lake. A few specimens were also taken on a stream which flows into Camp Three bay, near Bartlett Point on the upper lake. In addition to these collections, the writer has examined a small number of nymphs taken in seine hawls by Messrs. J. R. Dymond and J. L. Hart.

General Features of the Odonate Fauna

The dragonfly fauna of the Abitibi region is, in general, typical of the Algonquan faunal area, having a slight Hudsonian element. It is similar to that of the Nipigon region[1], but more restricted, owing to the less diversified topography of the country, although the absence of some of the species listed from the latter region is no doubt due to the less extensive collecting done at Lake Abitibi.

On the whole the region traversed is unfavourable for Odonate life. The lake itself is apparently too cold[2] for any species except in very

[1]Walker, The Odonata of the Thunder Bay District, Can. Ent., LVI, 170-176, 182-189, 1924.

[2]For temperature records see Dymond, J. R. and Hart, J. L. "The Fishes of Lake Abitibi, Ontario and Adjacent Waters", Univ. Toronto Studies, Biol. Ser., No. 29, 1927, pp. 5-6.

shallow, sheltered bays, where there is an abundance of emergent aquatic vegetation, and even here there are but few species. The Lowbush river, a stream of considerable size as a dragonfly habitat, appeared to be almost devoid of any species of the order (at least within a few miles of its mouth), and even the smaller streams were singularly unproductive. The paucity of lotic species is, in fact, particularly marked, the only species of this habit being *Cordulegaster maculatus*, *Somatochlora minor*, and *Chromagrion conditum;* and the last named is represented in the collection only by a single female taken by Mr. Bigelow. Some of the small running streams appeared to be typical haunts for *Agrion maculatum* or *A. aequabile*, but neither Agrions nor Gomphines nor Macromiines were met with at all. It must not be inferred, however, that these groups are wholly absent from the district, as further collecting would doubtless result in the finding of additional species.

Somewhat more productive than the Lowbush river was the Ghost river, a smaller stream which we explored for about six miles from its mouth. It is quiet and meandering and is largely bordered by open marsh, but even here dragonflies were remarkably scarce. This was doubtless due partly to disturbance of the original conditions caused by the raising of the lake level for purposes of water power, the effects of this change of level extending as far up the river as we followed it. The original peat bogs were all submerged and grown over with Equisetum and other emergent vegetation.

The only places where dragonflies were really numerous were along the railway right-of-way within a few miles of Lowbush, where the ditches along the tracks contained many small ponds and boggy sloughs and in some places gently running water, drained from the black spruce swamps, which are very prevalent in this region. Here dragonflies were fairly plentiful and most of the species listed below were observed here, although some of them, such as *Aeshna eremita* and *Tetragoneuria canis*, were undoubtedly wanderers.

The general impression received by the writer on this and other collecting trips in the north is that dragonfly life in Canada diminishes northward, not only in the number of resident species, but also in the variety of habitats and in the number of individuals produced per unit of area. The lotic species are the first to disappear. No dragonflies breed around the rocky islands of Lake Abitibi and Lake Nipigon, whereas they are richly represented in similar stations in Georgian bay. The next

to go are the species from the deeper ponds and streams, the marshes become relatively unproductive, and finally, the only habitats where dragonflies are at all comparable in number with those of warmer latitudes are the small, shallow, permanent ponds and ditches, fully exposed to the sun. Most of these ponds must freeze to the bottom during the severe winter of the Abitibi region, and it is thus evidently not the winter temperature but that of the season of activity, which is the determining factor in the northward distribution of dragonflies.

Of the thirty species of Odonata listed below two deserve special mention, viz. *Aeshna interrupta lineata* and *Tetragoneuria canis*. The former was hitherto unknown east of Manitoba and the latter had not been recorded north of Algonquin Park.

Besides the species listed the following should certainly occur in the Abitibi region: *Enallagma cyathigerum* (Charp.), *Aeshna sitchensis* Hagen, *Somatochlora elongata* (Scudd.), *S. franklini* (Selys), *S. forcipata* (Scudd.), *Dorocordulia libera* (Selys), and *Tetragoneuria spinigera* (Selys). *D. libera* was, in fact, almost certainly observed on the Ghost river. A few of the Gomphines recorded from Lake Nipigon, such as *Ophiogomphus colubrinus* (Selys) and *Gomphus brevis* Hagen, must also be regarded as very probable inhabitants of the region.

In the following list the abbreviations (B.) and (W.) refer respectively to Mr. N. K. Bigelow and the writer.

Suborder Zygoptera

Lestes uncatus KIRBY. Lowbush, July 6, a pair in cop., taken at one of the ponds along the railway, several others seen (W.); Aug. 14, 1 ♀ (B.).

Lestes disjunctus SELYS. Lowbush, July 20, 1 ♂ taken at one of the railway ponds (W.); small lake on the Ghost river, July 6, 2 nymphs (ult. and penult. stages), taken in seine hawl (J. L. Hart).

Chromagrion conditum (HAGEN). Long point, June 19, 1 ♀ (B.)

Nehalennia irene (HAGEN). Ghost river, July 7, 1 ♂ (W.); Camp 33, upper lake, July 7, 1 ♂ (B.). The male from the Ghost river was taken in an open marsh surrounding a drowned lake on a tributary of the river.

Enallagma boreale SELYS. Ghost river, July 9 and 10, 1 ♀, 1 ♂ (W.). Lowbush, July 19, 1 ♀. Shea's bay, June 17, 2 full-grown nymphs in seine hawl (J. L. Hart).

This species, usually the commonest in the north, was surprisingly scarce. Probably its season was nearly over, as it always appears earlier than *E. hageni* where the two occur together.

Enallagma hageni (WALSH). Long point, June 19-23, 2♂, 2 ♀ (B.); Ghost river, July 4, 4 ♂ 2 ♀ (B.); July 7-10 (W.); Lowbush, June 13-21 (B.); July 6, 13-20 (W.); Shea's bay, June 24, 1 full-grown nymph in seine hawl (J. L. Hart).

Fairly common on the Ghost river and abundant about Shea's bay (near Lowbush), both in the marsh bordering the bay and about some of the ponds nearby. The specimens are larger than usual, some of them as large as an average-sized *E. boreale.*

Coenagrion resolutum (SELYS). Lowbush, June 13-July 20 (B., W.); Ghost river, July 4-10 (W.).

Common on the Ghost river and abundant about all the railway ponds near Lowbush. The commonest and most generally distributed of all the Odonata of the region.

Coenagrion interrogatum (SELYS). Lowbush, June 23, 1 ♂ (B.); July 14-20 (W.).

Common over still water in a ditch near Shea's bay, in common with *C. resolutum.* Pairs in copula were taken on July 14 and 19. An unsuccessful search was made for the nymph, which is still unknown. One male specimen has the pale humeral bands only partly divided while in another they are entire. This is a very unusual variation in this species.

Suborder Anisoptera

Cordulegaster maculatus SAY. Lowbush, July 3, 1 ♀ (A. Pritchard); stream flowing into Camp Three bay, July 17, 3♂ 1♀ (W.).

A few males of this species were observed in flight over portions of the stream referred to, where there was a considerable current. The female was taken while ovipositing in water a foot or more in depth. She flew up and down in an almost upright position, dipping the end of the abdomen into the water. The only other occasion in which I observed this species in the Abitibi region was on the following day, when one appeared over running water in a ditch near Lowbush.

Aeshna eremita SCUDD. Ghost river, July 7-10 (W.); Lowbush, July 14-19 (W.); July 22, 1 ♂ (J. L. Hart); Aug. 5, 1 ♂ 2 ♀ (B.); island in upper lake, July 17, 1 ♂ (J. R. Dymond). Small lake on Ghost

river, July 6, 3 nymphs (penult. and earlier stages) in seine hawl (J. L. Hart).

A few exuviae were found in the marshes of the Ghost river and occasional adults observed. Adults were also seen on the lower part of the stream flowing into Camp Three bay and appeared to be generally distributed but nowhere abundant. Occasional individuals were seen along the railway near Lowbush but were not attracted to the ponds. The specimen taken by Professor Dymond was remarkable for its deep colour, a blue with a distinct purplish tinge.

In my paper on "The Odonata of the Thunder Bay District" (loc. cit.) reference is made (p. 182) to a number of young nymphs referred to *Aeshna interrupta interrupta*, but remarkable for the sharply angulate postero-lateral corners of the head, a feature not present in later stages of this species. The possibility of their belonging to *A. eremita* was not considered seriously, because of the fact that the lateral spines in *eremita* are present on segments 5 to 9, whereas in these specimens they appear only on segments 6 to 9, as is usual in this genus. The Abitibi nymphs, however, have not only angulate heads but also small spines on seg. 5, and they bridge very obviously the gap between the stage represented by the Nipigon specimens and the later stages of *eremita*, for even in these the corners of the head are somewhat angulate, as pointed out in my description of the full-grown nymph[1] and shown in the figure. In thus referring these nymphs to *eremita* instead of *interrupta* we are spared the necessity of assuming a sudden change of form in the development of the head in the latter species, in which the hind angles are doubtless rounded in all the stages.

Aeshna interrupta interrupta E. WALK. Lowbush, July 5-Aug. 1, 2 ♂ 1 ♀ (B.); July 18, 1 ♀ (W.). Shea's bay, Jule 17, 1 half-grown nymph in seine hawl (J. L. Hart).

Probably much commoner than the records indicate. All the specimens are typical.

Aeshna interrupta lineata E. WALK. Lowbush, July 19, 1 ♀ (W.); Aug. 10, 1 ♀ (B.).

These specimens are typical of the prairie race *lineata*, which was hitherto unknown east of Manitoba. Its occurrence here is puzzling, as

[1]Walker, E. M. The North American Dragonflies of the Genus Aeshna, University of Toronto Studies, Biol. ser., No. 11, p. 125, 1912.

we have believed that these races were strictly geographical and grade into one another in transitional areas. Males from this locality will be awaited with interest, since it is in this sex that the racial characters are most pronounced.

Aeshna juncea L. Lowbush, July 14-20 (W.).

This Hudsonian and circumpolar species was frequent about the small marshy sloughs along the railway. A female was taken with its exuvia on July 15, but most of the individuals seen were in full colour.

Aeshna subarctica E. WALK. Ghost river, July 7, 1 teneral ♀, captured in a seine by Messrs. Dymond and Hart while fishing in a small, drowned lake connected with the river. Shea's bay, 2 nymphs, full-grown and penultimate stage, in seine hawl (J. L. Hart).

Aeshna umbrosa E. WALK. Lowbush, Aug. 5-10, 3 ♂ (B.).

This species had not appeared in the adult stage during my visit to Lake Abitibi. In one of the specimens, in which the colours are well preserved, the postero-dorsal spots appear to be blue on all but the last 3 segments. This specimen is almost typical of the so-called western race *occidentalis* E. Walk.

Cordulia shurtleffi SCUDD. Long point, June 19, 1 ♀ (B.); Lowbush, June 16, 23, 1 ♂ 1 ♀ (B.); July 19 (W.); Ghost river, July 7-10 (W.); Ghost river lake, July 6, 1 nymph in seine hawl (J. L. Hart).

Frequently seen flying over the marshes along the Ghost river, but less common than usual at this latitude.

Somatochlora walshii (SCUDD.) Lowbush, July 14, 1 ♂, taken while flying over one of the railway ponds.

Somatochlora minor CALVERT. Lowbush, July 13-20 (W.); Aug. 1, 1 ♂ (J. R. Dymond); Aug. 7, 1 ♂ (B.); stream flowing into Camp Three bay, July 17 (W.).

The commonest Somatochlora of the district. Males were frequently seen flying over quietly running water in the railway ditches. It was also common on the stream emptying into Camp Three bay, where it was associated with *Cordulegaster maculatus*, and was seen occasionally on one or two other streams. No females were observed at any time.

Somatochlora williamsoni E. WALK. Lowbush, Aug. 5-26, 4 ♂ (B.).

This species probably breeds in some of the tributaries of the Lowbush river. It did not appear along the railway ditches during my visit to this district.

Somatochlora kennedyi E. WALK. Lowbush, July 14, 1 ♂, July 15, 1 ♀ (W.).

These individuals were flying over the railway ponds. One or two others were seen.

Somatochlora albicincta (BURM.). Lowbush, July 14, 18 (W.). On July 14 two males were captured over ponds along the railway, another over gently running water. Several were observed on the 18th over comparatively clear ponds and one male taken. Sometimes they fly five or six feet above the water but usually much closer to it.

Somatochlora cingulata (SELYS). Sucker lake, July 9, a single nymph, penultimate stage, was taken in a seine by Messrs. Dymond and Hart. This is a small muskeg lake in which the only fish taken were red-bellied dace, Cope's minnows and fat-head minnows (Dymond, *loc. cit.*).

Tetragoneuria canis MACLACHLAN. Lowbush, June 13, 4 ♂, 4 ♀ (B.); July 5, 13-18 (W.); stream flowing into Camp Three bay, July 17 (W.); Ghost river, July 7-10 (W.).

Fairly common on the Ghost river, on the drowned portions of the stream at Camp Three bay and along the railway near Lowbush. A few were also observed at the mouth of a small tributary of the Lowbush river. The specimens taken in June have hyaline wings, but in the females taken in July the wings are deeply suffused with amber brown. This seems to be an invariable feature of the wings of old females.

The presence of this species in the Abitibi region was unexpected as it was not found in the Nipigon district and was, in fact, hitherto unknown north of Algonquin Park.

Libellula quadrimaculata L. Lowbush, June 8, 23, 1 ♂, 1 ♀ (B.); July 13-20 (W.); Ghost river, July 7-10 (W.); stream flowing into Camp Three bay, July 17 (W.). Shea's bay, July 17, 24, 4 full-grown nymphs in seine hawl (J. L. Hart).

Common and generally distributed about ponds and still marshy waters, It was much the commonest of the larger dragonflies about the railway ponds.

Libellula julia UHLER. Long point, June 19, 2 ♀ (B.).

Sympetrum danae (SULZ.) (=**scoticum** DONOV.) Lowbush, July 14 (W.); Aug. 1, 1 ♂ 2 ♀; Aug. 16 1 ♂ (B.).

Newly emerged individuals were observed about the ponds along the

railway from July 14. All the July specimens and the male taken on August 1 are tenerals while the male dated Aug. 16 is fully mature.

Sympetrum decisum (HAGEN). Lowbush, July 14-20 (W.); Aug. 16, 1 ♂ (B.).

First observed on July 14 emerging from ponds along the railway. It continued to emerge during my stay at Lowbush. The August specimen is fully coloured.

Sympetrum obtrusum (HAGEN). Lowbush, Aug. 13, 2 ♂ (B.). Both specimens are mature. The lateral thoracic vittae, usually obscure in mature males of this species, are distinct in these individuals.

Leucorrhinia hudsonica (SELYS). Lowbush, June 16, 23, 5 ♂ 6 ♀; July 10, 1 ♂ (B.); July 5, 13-20 (W.); Ghost river, July 7-10 (W.); near stream flowing into Camp Three bay, July 17 (W.); Mace, July 15, young nymphs (W.).

Generally distributed, but not abundant. Only a few were seen on the Ghost river and a single male near the stream at Camp Three bay. It was commonest about the railway ponds. Nymphs of next year's brood were found in a weedy ditch along the railway at Mace.

Leucorrhinia glacialis HAGEN. Lowbush, July 19 (W.).

A single male of large size and full colour was taken on the railway track near Shea's bay.

Leucorrhinia proxima CALVERT. Long point, June 19, 1 ♀ (B.); Ghost river, July 7-10 (W.); Lowbush, July 20, 25, nymphs (J. L. Hart).

This species was less common than usual in northern Ontario. A few were seen during our visit to the Ghost river, including one newly emerged male with its exuvia, taken on July 8 on the main river, and a female, taken in copula with a male of *L. hudsonica*. Many exuviae were found on the emergent vegetation. A nymph of penultimate stage was taken by Mr. Hart in one of the ponds along the railway track on July 20, and the collection also contains a full-grown nymph, labelled "L. Abitibi, 1925", but without further data.

SPIDERS FROM THE LAKE ABITIBI REGION

Determined by J. H. EMERTON, *Boston, Mass.*

Epeira angulata CLERCK. Coney Island, June 25, 1925.
Epeira strix HENTZ. Chesney's lake, June 19.
Epeira displicata HENTZ. Shea's bay, in water, June 17; July, 1925.
Epeira patagiata (CLERCK) THOR. Chesney's lake, June 19; Camp 33, July 5.
Zilla montana C. KOCH. Camp 33, July 5.
Tetragnatha grallator HENTZ. Camp 33, July 7.
Tetragnatha laboriosa HENTZ. Lowbush, July 2.
Pachygnatha brevis KEYSERLING. Shea's bay, in water, June 17; Shea's bay, June 24.
Steatoda borealis HENTZ. Male and female, Coney island, June 25.
Linyphia clathrata SUNDEVALL. Lowbush, July 2.
Linyphia marginata KOCH. Camp 33, July 5.
Linyphia phrygiana KOCH. Coney island, June 25.
Amaurobius bennetti BLACKWALL = **sylvestris** EM. Coney island, June 25.
Gnaphosa gigantea KEYS = **conspersa** THORELL. Coney island, June 25; loc.? June 15; July 25.
Clubiona canadensis EM. Shea's bay, in water, June 17, 1925.
Xysticus limbatus KEYSERLING. Lowbush, July 2.
Xysticus formosus BANKS. Lowbush, July 2.
Coriarachne versicolor KEYSERLING. Camp 33, July 25.
Coriarachne brunneipes BANKS. Chesney's lake, June 19.
Misumena vatia THORELL. Camp 33, July 7; loc.? June 15; loc.? June 17.
Philodromus vulgaris HENTZ. July, 1925.
Philodromus pictus EMERTON. Shea's bay, June 24; loc.? June 15.
Tibellus oblongus WALCK. Female, Lowbush, June 22; male and female, Lowbush, July 2; June 17; Shea's bay, June 24.
Lycosa beanii EM. Female, Lowbush, June 22.

Lycosa pratensis EM. Coney island, June 25.

Pardosa mackenziana KEYS. = **uncata** THORELL. Chesney's lake, June 19; Lowbush, July 2.

Pardosa xerampelina KEYS. = **tachypoda** THORELL. Lowbush, July 2; among rocks, Mace, June 16; Camp 33, July 7; loc.? July 25.

Pardosa glacialis THORELL. Male and female, July, 1925.

Pirata insularis EMERTON. Male and female, Lowbush, July 2; Shea's bay, June 24.

Dolomedes sexpunctatus HENTZ. Shea's bay, in water, pond connected with bay, June 17; Shea's bay and environs, June 24, 1925.

Pellenes lagganii PECKHAM. Camp 33, July 5.

Phidippus albomaculatus KEYS. Chesney's lake, June 19; Lowbush, July 2; Camp 33, July 7; among rocks, Mace, June 16.

FIG. 1. Village of Lowbush, showing Circle and Lowbush rivers, the former in the foreground.

FIG. 2. Flooded shoreline at Camp 33.